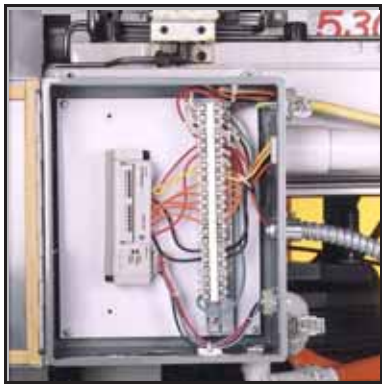
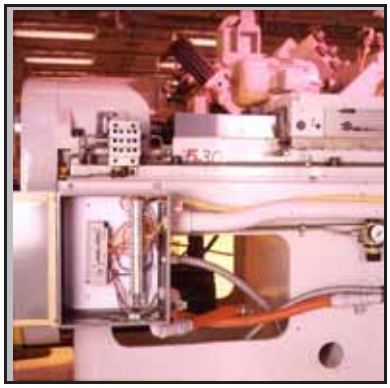
Allen-Bradley

Technical Data

CompactBlock I/O for DeviceNet

1791D





The 1791D CompactBlock I/O modules contain I/O circuits, a built-in power supply, and a built-in DeviceNet™ I/O adapter. CompactBlock I/O modules are ideal for applications restricted by space limitations and applications requiring highly distributed I/O blocks close to sensors and actuators.

The following CompactBlock I/O modules are available:

CompactBlock I/O

- 4 sinking input base module (1791D-4B0)
- 4 sinking input/ 4 sourcing output base module (1791D-4B4P)
- 8 sinking input/ 8 sourcing output base module (1791D-8B8P)
- 8 sourcing input/ 8 sinking output base module (1791D-8V8P)
- 16 sinking input base module (1791D-16B0)
- 16 sinking input expansion module (1791D-16B0X)
- 16 sourcing input base module (1791D-16V0)
- 16 sourcing input expansion module (1791D-16V0X)
- 8 sourcing output base module (1791D-0B8P)
- 16 sourcing output base module (1791D-0B16P)
- 16 sourcing output expansion module (1791D-0B16PX)
- 16 sinking output base module (1791D-0V16P)
- 16 sinking output expansion module (1791D-0V16PX)

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of these products must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards. In no event will Rockwell Automation be responsible or liable for indirect or consequential damage resulting from the use or application of these products.

Any illustrations, charts, sample programs, and layout examples shown in this publication are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Rockwell Automation does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley™ publication SGI-1.1, *Safety Guidelines for the Application, Installation and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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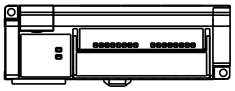
Overview

CompactBlock I/O modules are compatible with PLC®, SLC™ or SoftLogix™ programmable controllers using DeviceNet scanners. All CompactBlock I/O module values are accessible through the data tables of the PLC or SLC programmable controller.



Compact Block I/O Module

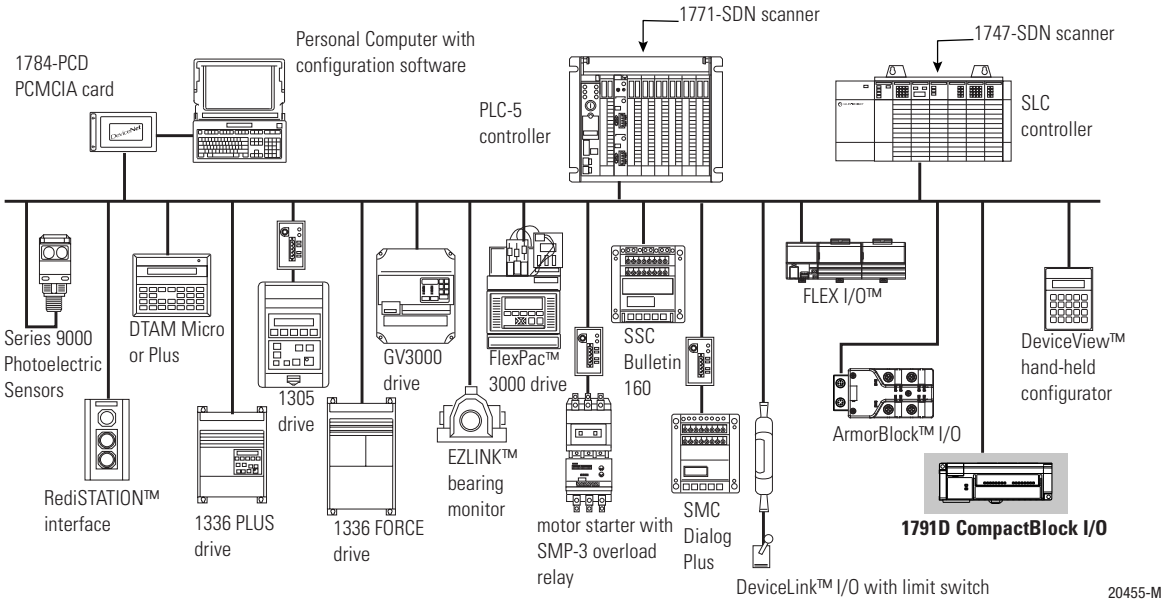
Node addresses on the modules are set using rotary switches, located on the module, RSNetworx for DeviceNet™ software or a similar configuration tool. All other module parameters are set using a similar configuration tool.

Features and Benefits

Feature:	Benefit:
10–30V dc device power	accommodates broad range of power supplies and multiple voltage levels from the network
NEMA type 1+ inputs	compatible with a broad range of sensors
output short-circuit protection	protects outputs against accidental miswiring
hardware watchdog function	puts outputs in a known state if the microprocessor or crystal fails
I/O block located close to sensors and actuators	lower wiring costs
compact size of I/O block	module requires no adapter or power supply
autobaud detection	module automatically matches system baud rate - no crashing due to incorrect baud setting
rotary node address switches	reduces node commissioning time
selectable input filters	select off-to-on and on-to-off delays best suited for your application
change-of-state operation	improves network throughput by reducing network bandwidth usage
ODVA conformance tested	assures interoperability with other DeviceNet compliant devices and systems

Typical Configuration

This graphic shows how your CompactBlock I/O fits into a typical DeviceNet system.



System Compatibility

CompactBlock I/O modules are compatible with PLC, SLC or SoftLogix programmable controllers when used with DeviceNet scanners.

CompactBlock Family Module Communication

The CompactBlock modules act as a slave in a master/slave environment. Their I/O data is exchanged with the master through a polled, cyclic, or change-of-state connection. This selection is made in the DeviceNet scanner module's configuration.

Polled

When configured as a polled device, a master initiates communication by sending its polled I/O message to the CompactBlock module.

Cyclic

When using cyclic operation, the master only sends data to the CompactBlock I/O module and only receives data from the module at a preconfigured time interval.

Change-of-State

When the CompactBlock I/O module is configured for change-of-state, the master only sends output data when:

- the user's control program wants to update the module's output
- the time period for communication has expired

The CompactBlock module's input data is only sent to the master when:

- an input changes
- the time period for communication has expired

With change-of-state, the master does not have to request input data from the slave, it is sent automatically when data changes. In addition, an adjustable "heartbeat" is produced periodically by the CompactBlock module to let the consuming device know that the module connection is alive and ready to communicate.

Input Filtering

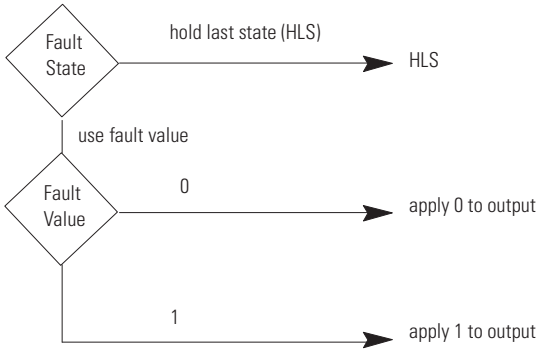
Input filtering limits the effect of voltage transients caused by contact bounce and/or electrical noise. If not filtered, voltage transients could produce false data.

To configure an input filter, an input signal delay is set to turn off-to-on or on-to-off for nominal amounts of time. The mode and filter time is set through RSNetworx for DeviceNet software, or a similar configuration tool.

Idle and Fault Mode Selection

When the PLC, SLC or PC-based programmable controller is in program mode, the DeviceNet scanner puts the CompactBlock module in an *idle state*. If the DeviceNet scanner drops off the network, the module goes to a *fault state*.

In both idle and fault states, the module resets its outputs by default. You can use RSNetworx for DeviceNet software or a similar configuration tool to change the default and set the module to save the last received outputs.



Fault state can be set to HLS or use fault value. The fault value can be set to 0 or 1. The same logic applies for idle conditions. 42455

DeviceLogix Functionality

The CompactBlock I/O family also offers modules that have DeviceLogix, a local logic capability that provides you with the ability to control outputs and manage status information locally, within the device. DeviceLogix is configured through a Function Block Editor that is accessed through RSNetWorx for DeviceNet. This editor lets

you create local logic using boolean logic (AND, OR, etc.), set and reset latches as well as a variety of timers and counters. User support for the editor can be found in the DeviceLogix Users Manual and online help.

CompactBlock products that support DeviceLogix have some device-specific capabilities and capacities, which are identified in the following table.

Capability/Capacity	CompactBlock I/O
Function Blocks supported	• boolean - AND, OR, XOR, NOT, NAND, NOR, XNOR • latches - RSL and SRL • timers - PUL, OND, and OFD • counters - UPC and UPD
maximum number of function blocks included in a configuration	48
Function Block processing time	1msec./24 blocks 2msec./48 blocks
network input bits	32
network output bits	8
available status bits	• explicit message connection • polled connection • change-of-state/cyclic connection • network fault • minor module fault • polled connection fault • polled connection idle • change-of-state/cyclic connection fault
logic status indication	• logic disabled - none • logic enabled - solid green • local forces are applied and local logic is enabled - flashing green

Optional I/O Assemblies

The DeviceLogix-capable versions of CompactBlock I/O give you the ability to choose how much data the modules produce or consume over DeviceNet. Two new parameters have been added to the EDS files that let you select the amount of data that will be transmitted or received.

Produced I/O Assembly

There are three options for Produced Data:

- **Default assembly** - Produces the device's input data and any fault/status data the device has.
- **Input only assembly** - Produces only the state of the device's inputs. This lets those who do not make use of the Diagnostic bits reduce their network traffic.

- **DeviceLogix assembly** - Produces all of the standard information from the Default assembly plus the data that is available as a result of invoking DeviceLogix.

  The new DeviceLogix data that is available includes:

  – **Logic Enabled bit** - This bit is high when DeviceLogix is running on a device and has been enabled. This can be used, for example, in the PLC program or on a DeviceNet MMI to indicate the presence of local logic control.

  – **Network Output bits** - These bits are used in the DeviceLogix configuration to send information back over the network. For example, the output of any Function Block can be connected to a network output bit.

  – **Hardware Output bits** - DeviceLogix lets you locally control the state of hardware outputs. Therefore these bits are produced by the device so that the state of the outputs can be sent back to the network master. If an output in the device is not under DeviceLogix control, its status is still controlled by the normal consumed data.

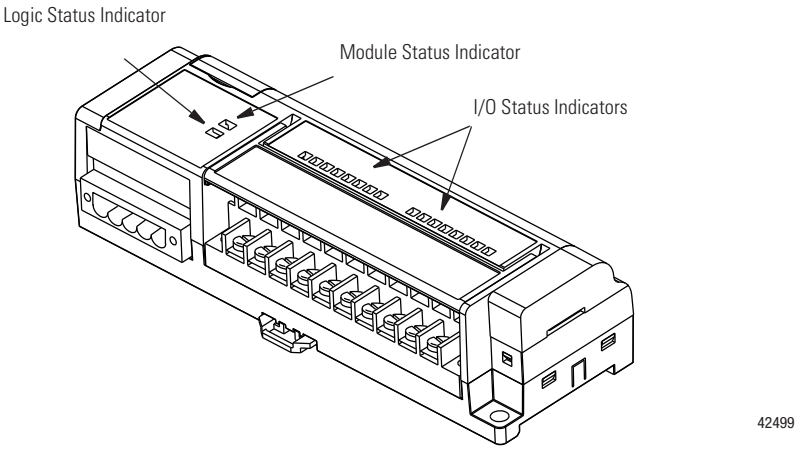
  The assemblies for CompactBlock I/O devices are listed in the sections that contain specific module information. Please refer to the **Specific Module Information** section, page 10, for a guide to specific module information.

Consumed I/O Assembly

DeviceLogix provides the device the ability to consume data from the DeviceNet master other than the normal state of the hardware outputs. This data is called Network Input Bits. Up to 32 of these bits can be consumed by the device. Five options exist for the variable amount of consumed data: 0, 1, 2, 3, or 4 bytes. A standard 16 output CompactBlock I/O module, for instance, consumes 16 bits (2 bytes). With DeviceLogix, you can choose to consume an additional 2 bytes of Network Inputs. If a hardware output is controlled by local logic, its state is no longer consumed and that bit becomes available to be used as a Network Input. For more on this concept, please see the DeviceLogix User Manual.

Status Indicators

Each CompactBlock I/O module has indicators to provide a diagnostic readout.



Module/Network Status Indicators (base only)

Indication:	Status:
Off	No power or auto bauding
Flashing Green/Off	On line but not connected
Solid Green	On line, link OK, connected
Flashing Red	Recoverable fault - (expansion module fault or module configuration error)
	I/O connection fault - one or more I/O connections in the timed-out state
Solid Red	Unrecoverable fault
	Communication failure - duplicate node address present or incorrect baud rate
Green to Red to Off	At powerup only - LED test

Logic Status Indicators (base only)

Indication:	Status:
Off	Logic is disabled
Solid Green	Logic is enabled
Flashing Green	Local forces are applied and local logic is enabled

I/O Status Indicators (base and expansion)

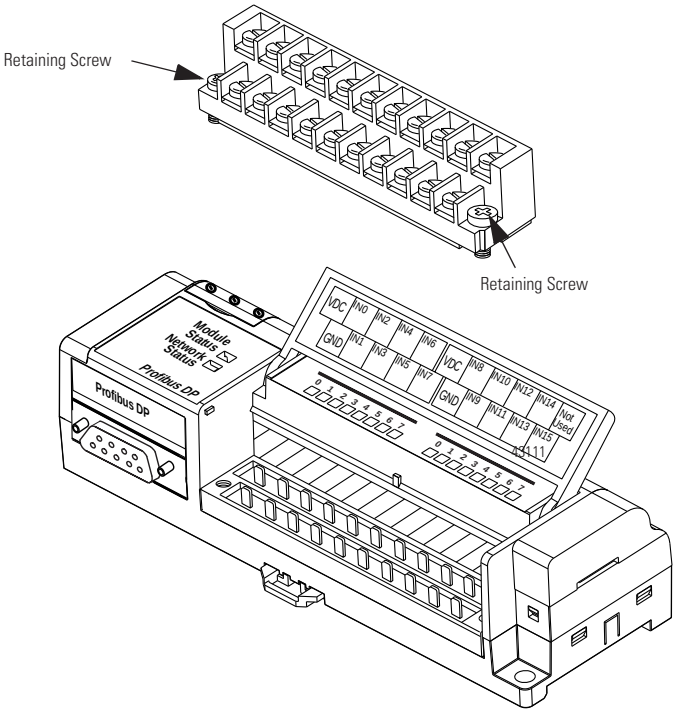
Function:	LED Color:	Module Illumination:	Condition:
Outputs	Yellow	None Yellow	Output not energized Output energized
Inputs	Yellow	None Yellow	No valid input Valid input

Power Supply Requirements

The DeviceNet network supplies power to the CompactBlock I/O base and expansion modules. Inputs and outputs are powered by an external 24V dc source which is independent of the network.

Removable Terminal Block

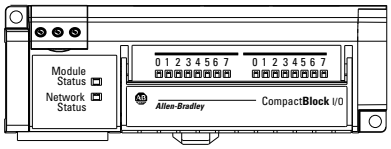
The CompactBlock module contains a removable terminal block which allows for easy module replacement without rewiring..



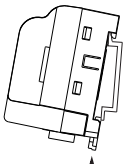
Mounting

Most CompactBlock I/O base and expansion modules can be mounted directly to a panel or on a DIN rail.

Panel mount - front view



DIN rail mount - side view



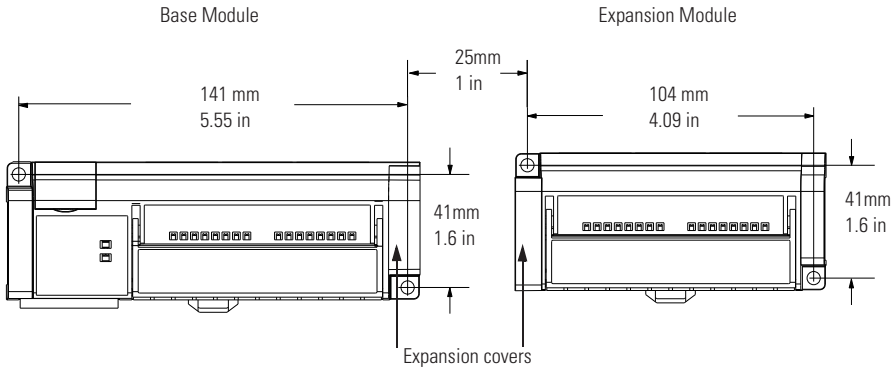
Use a standard screwdriver to pull down the locking tab, then push the module onto the DIN rail.

IMPORTANT Currently, these expansion blocks must be DIN rail mounted to meet our specifications:

- 1791D-16B0X
- 1791D-16V0X
- 1791D-0B16PX
- 1791D-0V16PX

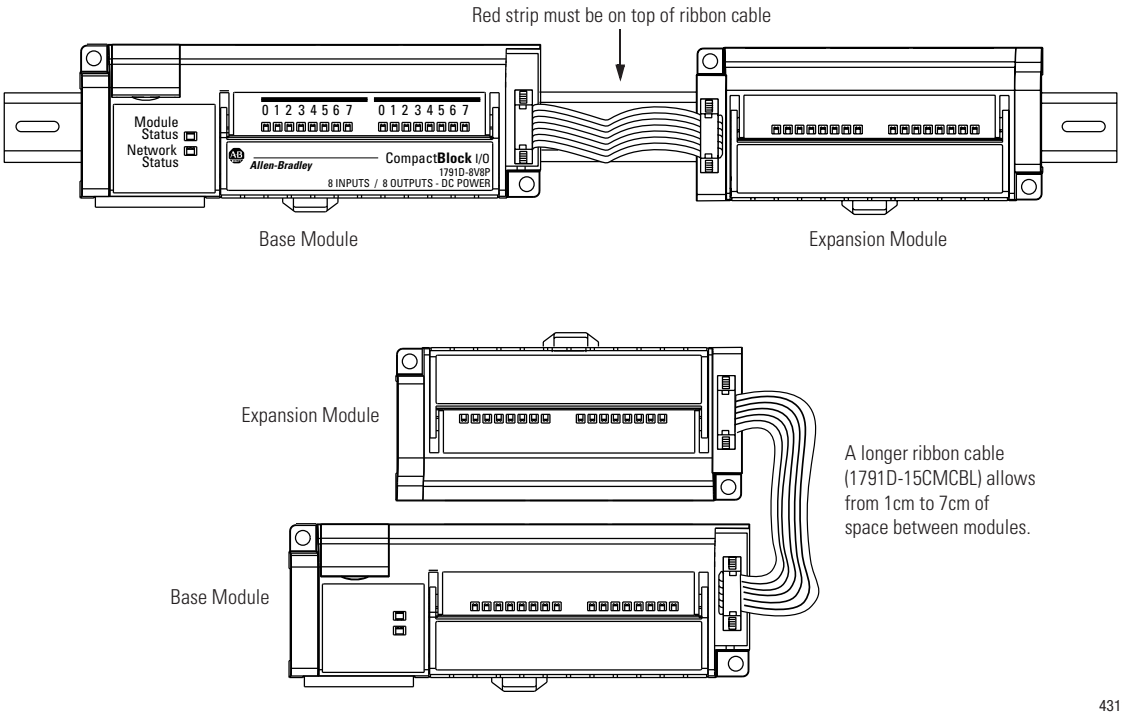
These expansion blocks cannot be panel mounted.

The following graphic shows the base and expansion modules mounting dimensions.



Remember to consider the length of the expansion ribbon cable when installing a base module with an expansion. The expansion module must be close enough for the expansion cable to reach from the base module to the expansion module. Modules can be mounted vertically or horizontally.

Base and expansion modules can be mounted side-by-side. The graphic below shows a base module connected to an expansion module.


Red strip must be on top of ribbon cable
Module Status
Network Status
0 1 2 3 4 5 6 7
0 1 2 3 4 5 6 7
Allen-Bradley
CompactBlock I/O
1791D-8V8P
8 INPUTS / 8 OUTPUTS - DC POWER
Base Module
Expansion Module
Expansion Module
Base Module
A longer ribbon cable (1791D-15CMCBL) allows from 1cm to 7cm of space between modules.
43117

CompactBlock I/O Cables

The following tables lists part numbers and descriptions for CompactBlock cables

CompactBlock I/O Expansion Cables

Description	Length cm(in)	Part Number
Replacement Expansion Cable[1]	4 (1.6)	1791D-4CMCBL
Optional Expansion Cable	10 (4)	1791D-10CMCBL

[1] This cable is shipped with the product, catalog number is for spare cables only.

DeviceNet Cables

Description	Length m	Part Number (aluminum):	Part Number (stainless steel):	Application:
Mini male to conductor (unshielded)	1	1485-P1M5-C	1485RS-P1M5-C	DeviceNet drop cable (flat media)
	6	1485R-P6M5-C	1485RS-P6M5-C	
Mini male to conductor (shielded)	1	1485R-P1M5-C	1485P-1M5-C	DeviceNet drop cable (round media)
	2	1485R-P2M5-C	1485RS-P2M5-C	
	3	1485RS-P3M5-C	1485RS-P3M5-C	

Specific Module Information

The remainder of this publication contains specification sheets for each CompactBlock I/O module. Refer to the table below for information about a specific module.

For information about:	See page:
4 sinking input base module (1791D-4B0)	11
4 sinking input/ 4 sourcing output base module (1791D-4B4P)	13
8 sinking input / 8 sourcing output base module (1791D-8B8P)	15
8 sourcing input/ 8 sinking output base module (1791D-8V8P)	17
16 sinking input base module (1791D-16B0)	19
16 sinking input expansion module (1791D-16B0X)	23
16 sourcing input base module (1791D-16V0)	27
16 sourcing input expansion module (1791D-16V0X)	31
8 sourcing output base module (1791D-0B8P)	35
16 sourcing output base module (1791D-0B16P)	37
16 sourcing output expansion module (1791D-0B16PX)	39
16 sinking output base module (1791D-0V16P)	43
16 sourcing output expansion module (1791D-0V16PX)	45

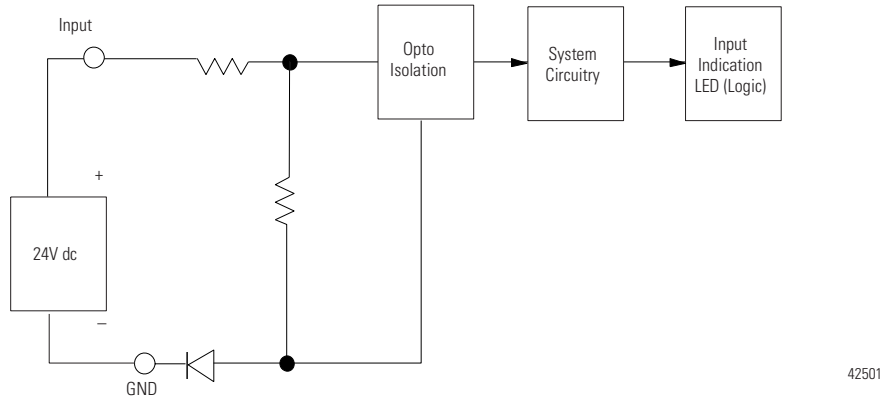
Related Publications

Refer to the following list of publications for more information about the CompactBlock I/O modules as well as the DeviceNet network and its products.

Title:	Publication Number:
CompactBlock I/O Product Profile	1791D-1.4
CompactBlock I/O Installation Instructions	1791D-IN001A-EN-P
DeviceNet Product Overview	DN-2.5
DeviceNet Cable System Planning and Installation Manual	DN-6.7.2

4 Sinking Input Base Module 1791D-4B0

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

For the Input Status bits, when the bit is set (1), the input is on.

1791D-4B0 module assemblies are below.

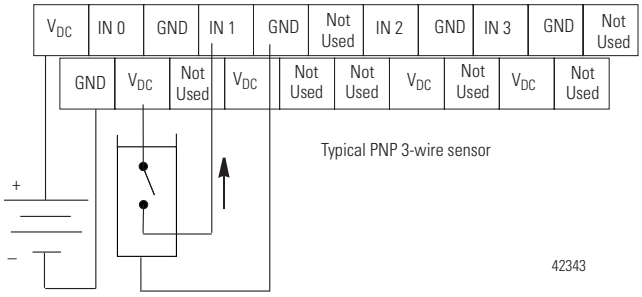
1791D-4B0 (Default Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0					In 3	In 2	In 1	In 0

1791D-4B0 (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0			Logic Ena		In 3	In 2	In 1	In 0
Byte 1	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0
Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)								

The DeviceNet Network uses advanced network technology, producer/consumer communication, to increase network functionality and throughput. Visit our Web site at http://www.ab.com/networks for producer/consumer technology information and updates.

Wiring Connections

Input Wiring Diagram for 1791D-4B0



Specifications

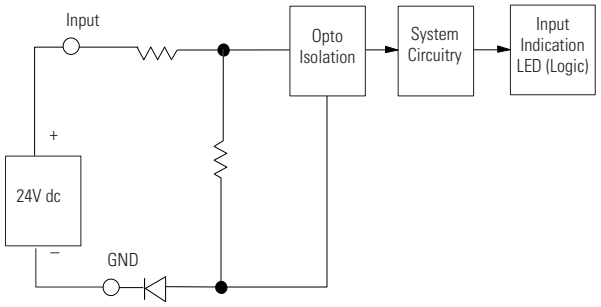
Sinking Inputs	**Max**
Inputs per Block	4
Off-state Voltage	5V
On-state Voltage	30V dc @ 40°C 25V dc @ 60°C
Off-state Current	-
On-state Current	11mA @ 30V dc
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V - 25 V dc 150mA maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

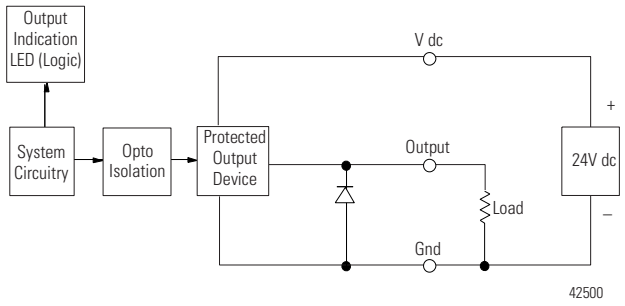
[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

4 Sinking Input/4 Sourcing Output Base Module 1791D-4B4P

Input Simplified Schematic



Output Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module produces 1 byte for every 8 inputs. Similarly, the module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Input Status bits, when the bit is set (1), the input is on. For the Output bits, when the bit is set (1), the output is on.

1791D-4B4P module assemblies are below.

1791D-4B4P (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0					In 3	In 2	In 1	In 0

1791D-4B4P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault				In 19	In 18	In 17	In 16

Exp Fault = Expansion Fault

1791D-4B4P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault				In 3	In 2	In 1	In 0

Exp Fault = Expansion Fault

1791D-4B4P (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0					In 3	In 2	In 1	In 0

1791D-4B4P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2					In 19	In 18	In 17	In 16

1791D-4B4P with a 1791-0B16PX or 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0					In 3	In 2	In 1	In 0

1791D-4B4P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0			Logic Ena		In 3	In 2	In 1	In 0
Byte 1					Out 3	Out 2	Out 1	Out 0
Byte 2	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena		In 19	In 18	In 17	In 16
Byte 3					Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

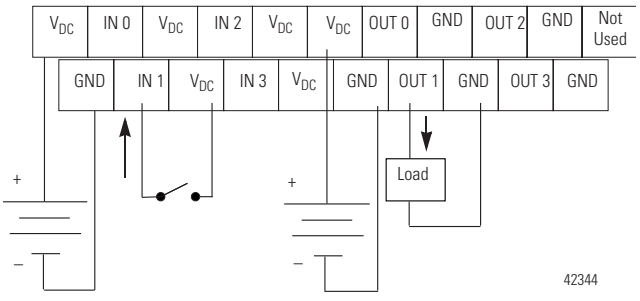
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena		In 3	In 2	In 1	In 0
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3					Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

The DeviceNet Network uses advanced network technology, producer/consumer communication, to increase network functionality and throughput. Visit our Web site at http://www.ab.com/networks for producer/consumer technology information and updates.

Wiring Connections

Wiring Diagram for the 1791D-4B4P Base Module



Specifications

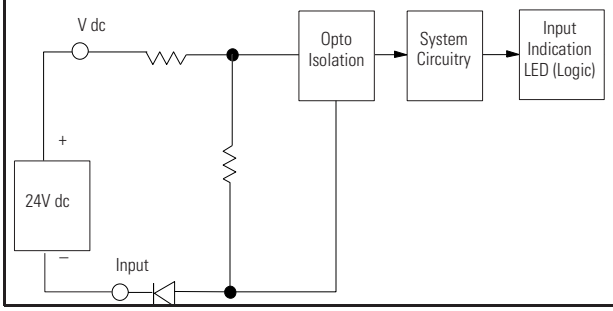
Sinking Inputs	Max
Inputs per block	4
Off-state Voltage Current	 5V dc -
On-state Voltage Current	 30V dc @ 40°C 25V dc @ 60°C 11mA @ 30V dc
Sourcing Outputs	
Outputs per block	4
On-state Voltage Range	10–30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5 A
Off-state Leakage	1.0mA
Module Current (all outputs)	4.0 A
Surge Current - for 10 mS repeatable every 2 S	1.0 A
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation Power supply to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11–30V dc 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10–30V dc 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications (where product or packaging is marked)	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

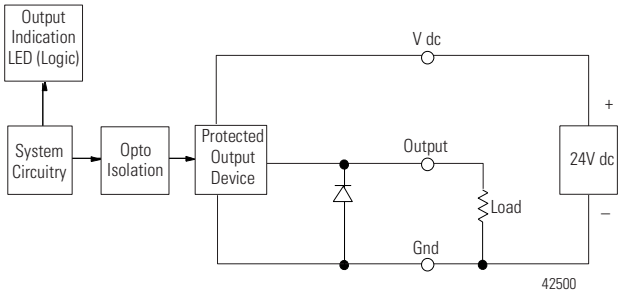
[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

8 Sinking Input/8 Sourcing Output Base Module 1791D-8B8P

Input Simplified Schematic



Output Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module produces 1 byte for every 8 inputs. Similarly, the module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For Input Status bits, when the bit is set (1), the input is on. For Output bits, when the bit is set (1), the output is on.

1791D-8B8P module assemblies are below.

1791D-8B8P (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8B8P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8B8P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16

1791D-8B8P with a 1791-0B16PX or 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8B8P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1			Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-8B8P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault		Logic Ena					
Byte 4	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-8B8P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault		Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 4	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

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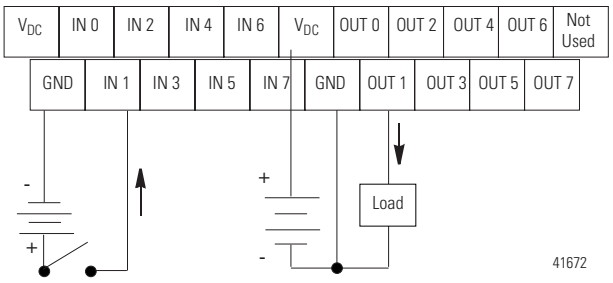
Wiring Connections

Wiring Diagram for the 1791D-8B8P Base Module



Specifications

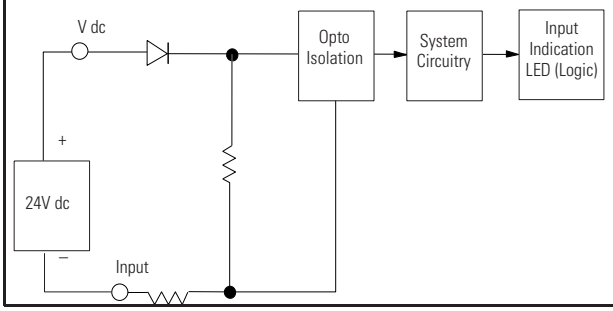
Sinking Inputs	Max
Inputs per block	8
Off-state Voltage	5V
On-state Voltage	30V dc @ 40°C 25V dc @ 60°C
Off-state Current	-
On-state Current	11mA @ 30V dc
Sourcing Outputs	
Outputs per block	8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms, repeatable every 2 s	1.0A maximum
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation Power supply to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V dc minimum 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10V dc minimum 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications (where product or packaging is marked)	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

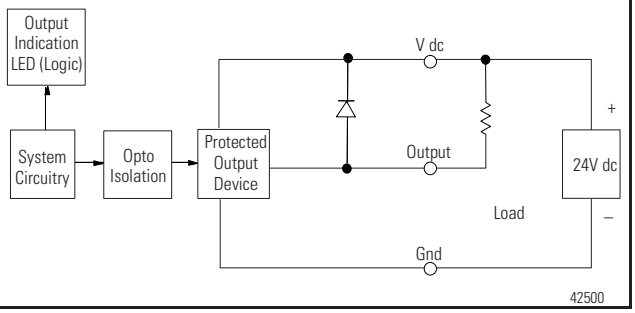
[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

8 Sourcing Input/8 Sinking Output Base Module 1791D-8V8P

Input Simplified Schematic



Output Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module produces 1 byte for every 8 inputs. Similarly, the module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For Input Status bits, when the bit is set (1), the input is on. For Output bits, when the bit is set (1), the output is on.

1791D-8V8P module assemblies are below.

1791D-8V8P (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8V8P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault							

Exp Fault = Expansion Fault

1791D-8V8P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-8V8P (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8V8P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16

1791D-8V8P with a 1791-0B16PX or 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8V8P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1			Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-8V8P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault		Logic Ena					
Byte 4	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-8V8P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault		Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 4	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

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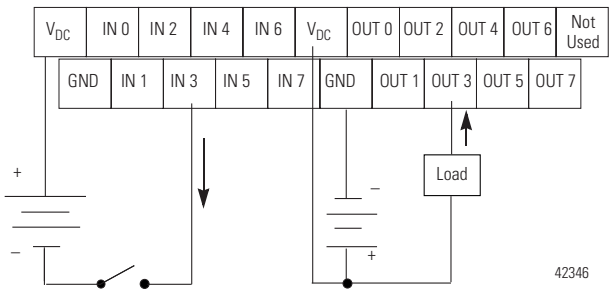
Wiring Connections

Wiring Diagram for the 1791D-8V8P Base Module



Specifications

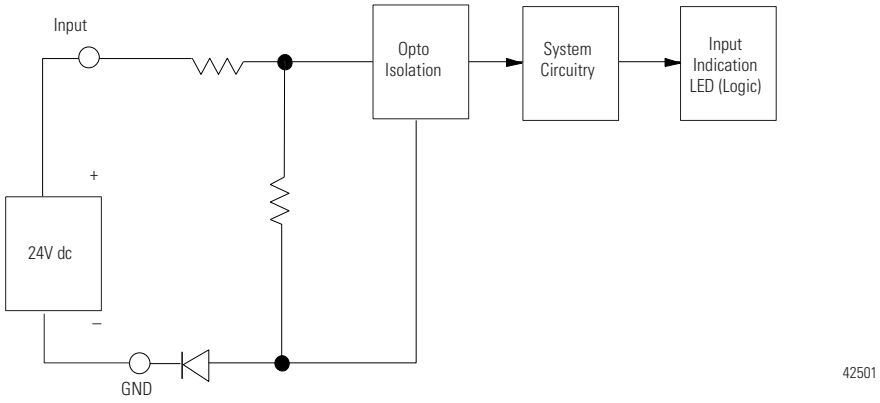
Sinking Inputs	Max
Inputs per block	8
Off-state Voltage Current	 5V dc -
On-state Voltage Current	 30V dc @ 40°C 25V dc @ 60°C 11mA @ 30V dc
Sourcing Outputs	
Outputs per block	8
On-state Voltage Range	10–30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5 A
Off-state Leakage	1.0mA
Module Current (all outputs)	4.0 A
Surge Current - for 10 mS repeatable every 2 S	1.0 A
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation Power supply to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11–30V dc 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10–30V dc 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications (where product or packaging is marked)	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

16 Sinking Input Base Module 1791D-16B0

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module produces 1 byte for every 8 inputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Input Status bits, when the bit is set (1), the input is on.

1791D-16BO module assemblies are below.

1791D-16B0 (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16B0 with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16B0 with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24

1791D-16B0 with a 1791-0B16PX or 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16B0 (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2			Logic Ena					
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0
Input Status bits - when the bit is set (1), the input is on. Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)								

1791D-16B0 with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault		Logic Ena					
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0
Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)								

1791D-16B0 with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0
Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)								

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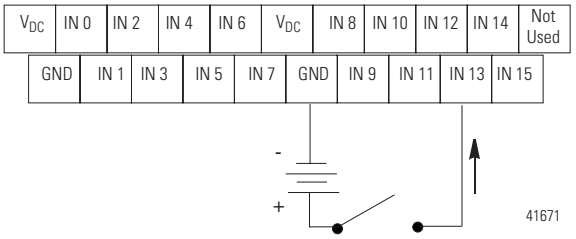
Wiring Connections

Input Wiring Diagram for 1791D-16B0



Specifications

Sinking Inputs	**Max**
Inputs per Block	2 groups of 8
Off-state Voltage	5V
On-state Voltage	30V dc @ 40°C 25V dc @ 60°C
Off-state Current	-
On-state Current	11mA @ 30V dc
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V - 25 V dc 200mA maximum (with expansion)
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge (2mm^2) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

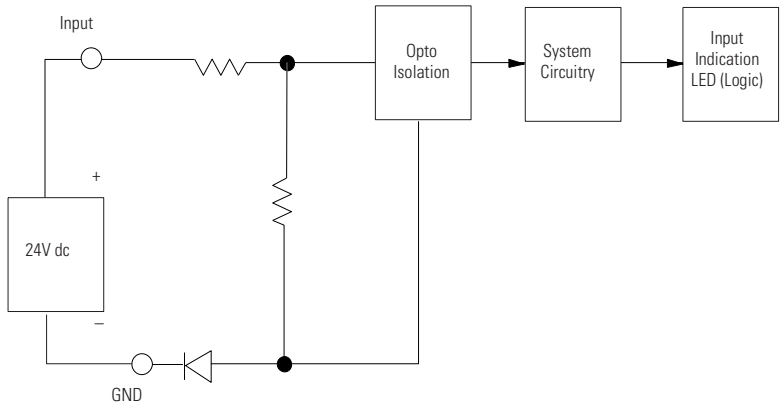
[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

16 Sinking Input Expansion Module 1791D-16B0X

Simplified Schematic



The CompactBlock expansion module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

This module produces 1 byte for every 8 inputs. When it is connected to a base module, an additional byte will be returned indicating the health of the expansion module. For the Input Status bits, when the bit is set (1), the input is on.

1791D-16B0X module assemblies are below.

1791D-16B0 or 1791D-16V0 with a 1791-16B0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 or 1791D-16V0 with a 1791-16B0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24

1791D-16B0 or 1791D-16V0 with a 1791-16B0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault		Logic Ena					
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B16P or 1791D-0V16P with a 1791-16B0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P or 1791D-0V16P with a 1791-16B0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B16P or 1791D-0V16P with a 1791-16B0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-8B8P or 1791D-8V8P with a 1791-16B0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P or 1791D-8V8P with a 1791-16B0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16

1791D-8B8P or 1791D-8V8P with a 1791-16B0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault		Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-16B0X (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault				In 19	In 18	In 17	In 16

Exp Fault = Expansion Fault

1791D-4B4P with a 1791-16B0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2					In 19	In 18	In 17	In 16

1791D-4B4P with a 1791-16B0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena		In 19	In 18	In 17	In 16
Byte 3					Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-16B0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-16B0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B8P with a 1791-16B0X expansion (DeviceLogix Assembly)

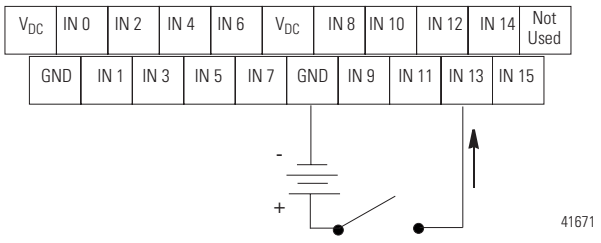
	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

The DeviceNet Network uses advanced network technology, producer/consumer communication, to increase network functionality and throughput. Visit our Web site at http://www.ab.com/networks for producer/consumer technology information and updates.

Wiring Connections

Input Wiring Diagram for 1791D-16B0X Expansion Module



Specifications

Sinking Inputs	**Max**
Inputs per Block	2 groups of 8
Off-state Voltage	5V dc
On-state Voltage	30V dc @ 40°C 24V dc @ 60°C
Off-state Current	1.5mA @ 5V dc
On-state Current	11mA @ 30V dc

General Specifications	
Indicators	I/O status - yellow
Communication Rate Thick Cable Flat Media 	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
Expansion Power Voltage Current	 5V dc 100mA
Expansion Module Dimensions	113mm X 48mm X 38mm 4.4in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30 g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

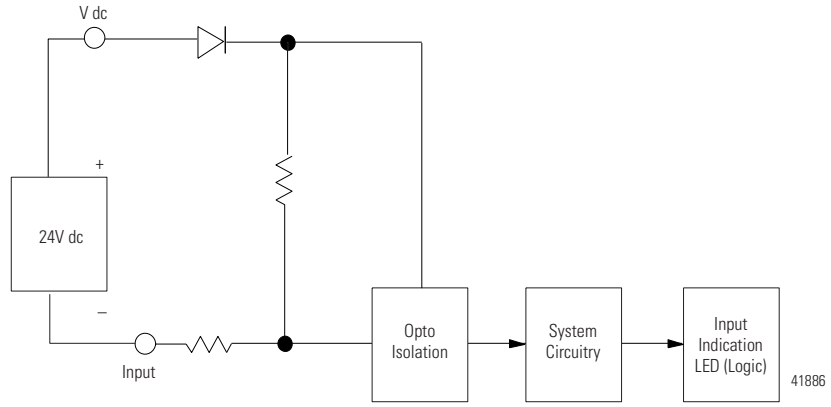
[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

16 Sourcing Input Base Module 1791D-16V0

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module produces 1 byte for every 8 inputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Input Status bits, when the bit is set (1), the input is on.

1791D-16V0 module assemblies are below.

1791D-16V0 (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16V0 with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault							

Exp Fault = Expansion Fault

1791D-16V0 with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-16V0 (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16V0 with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24

1791D-16V0 with a 1791-0B16PX or 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16V0 (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2			Logic Ena					
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Input Status bits - when the bit is set (1), the input is on.
Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-16V0 with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault		Logic Ena					
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

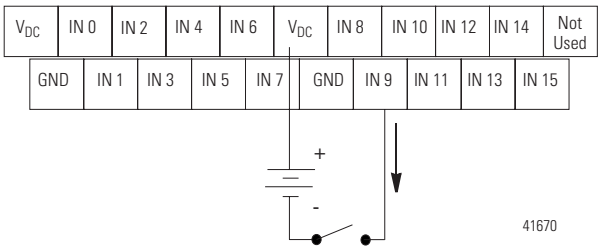
1791D-16V0 with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)								
	Bit 7	**Bit 6**	**Bit 5**	**Bit 4**	**Bit 3**	**Bit 2**	**Bit 1**	**Bit 0**
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

The DeviceNet Network uses advanced network technology, producer/consumer communication, to increase network functionality and throughput. Visit our Web site at http://www.ab.com/networks for producer/consumer technology information and updates.

Wiring Connections

Input Wiring Diagram for 1791D-16V0



Specifications

Sourcing Inputs	**Max**
Inputs per Block	2 groups of 8
Off-state Voltage	5V dc
On-state Voltage	30V dc @ 40°C 25V dc @ 60°C
Off-state Current	1.5mA @ 5V dc
On-state Current	11mA @ 30V dc
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11 - 25 V dc 200mA maximum (with expansion)
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6

General Specifications	
Conductors Wire Size Category	 14 gauge (2mm^2) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

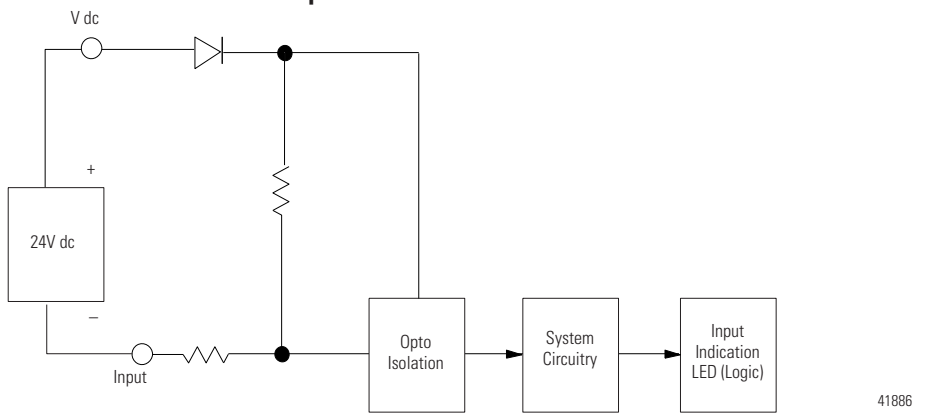
[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

16 Sourcing Input Expansion Module 1791D-16V0X

Simplified Schematic



The CompactBlock expansion module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

This module produces 1 byte for every 8 inputs. When it is connected to a base module, an additional byte will be returned indicating the health of the expansion module. For the Input Status bits, when the bit is set (1), the input is on.

1791D-16V0X module assemblies are below.

1791D-16B0 or 1791D-16V0 with a 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 or 1791D-16V0 with a 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24

1791D-16B0 or 1791D-16V0 with a 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	In 31	In 30	In 29	In 28	In 27	In 26	In 25	In 24
Byte 4	Exp Fault		Logic Ena					
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B16P or 1791D-0V16P with a 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P or 1791D-0V16P with a 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B16P or 1791D-0V16P with a 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-8B8P or 1791D-8V8P with a 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P or 1791D-8V8P with a 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16

1791D-8B8P or 1791D-8V8P with a 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	In 23	In 22	In 21	In 20	In 19	In 18	In 17	In 16
Byte 3	Exp Fault		Logic Ena					
Byte 4	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-16V0X (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault				In 19	In 18	In 17	In 16

Exp Fault = Expansion Fault

1791D-4B4P with a 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2					In 19	In 18	In 17	In 16

1791D-4B4P with a 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena		In 19	In 18	In 17	In 16
Byte 3					Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B8P with a 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

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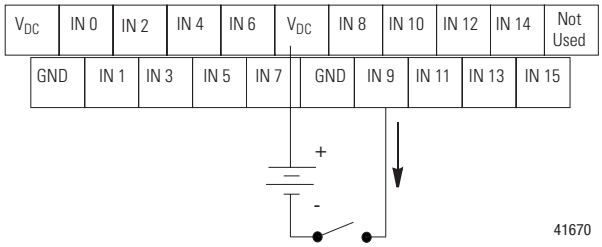
Wiring Connections

Input Wiring Diagram for 1791D-16V0X Expansion Module



Specifications

Sourcing Inputs	**Max**
Inputs per Block	2 groups of 8
Off-state Voltage	5V dc
On-state Voltage	30V dc @ 40°C 24V dc @ 60°C
Off-state Current	1.5mA @ 5V dc
On-state Current	11mA @ 30V dc
General Specifications	
Indicators	I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
Expansion Power Voltage Current	 5V dc 100mA
Expansion Module Dimensions	113mm X 48mm X 38mm 4.4in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30 g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

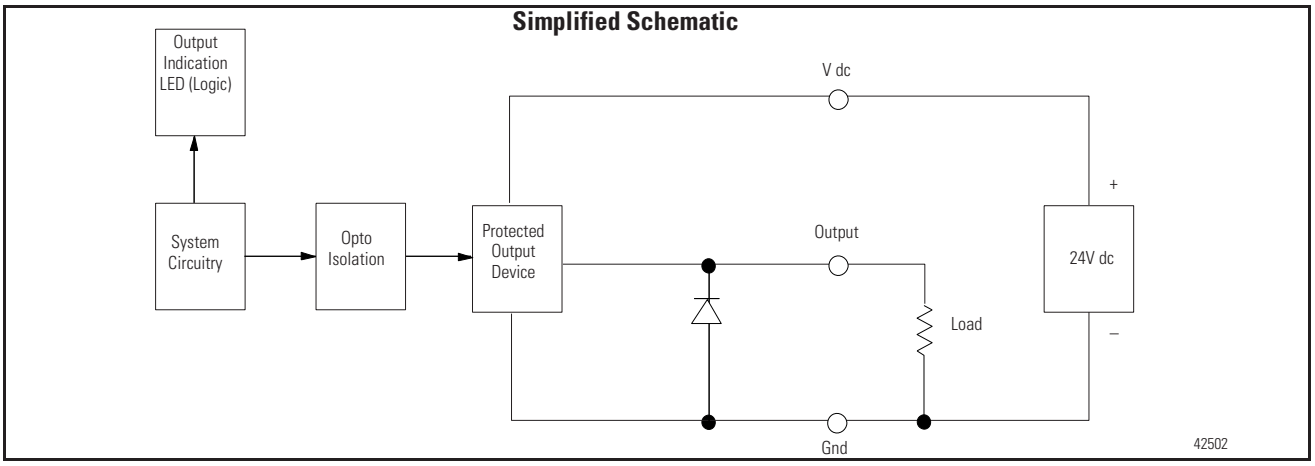
[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

8 Sourcing Output Base Module 1791D-0B8P

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Output bits, when the bit is set (1), the output will be turned on.

1791D-0B8P module assemblies are below.

1791D-0B8P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B8P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0			Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

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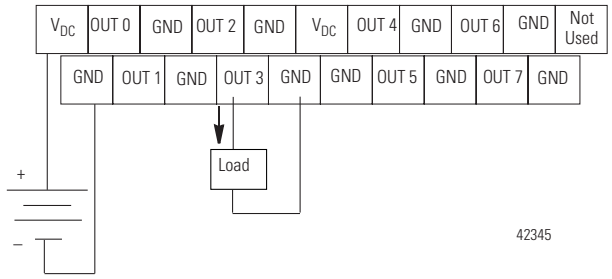
Wiring Connections

Output Wiring Diagram for 1791D-0B8P



Specifications

Sourcing Outputs	
Outputs per Block	8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms, repeatable every 2 s	1.0A maximum

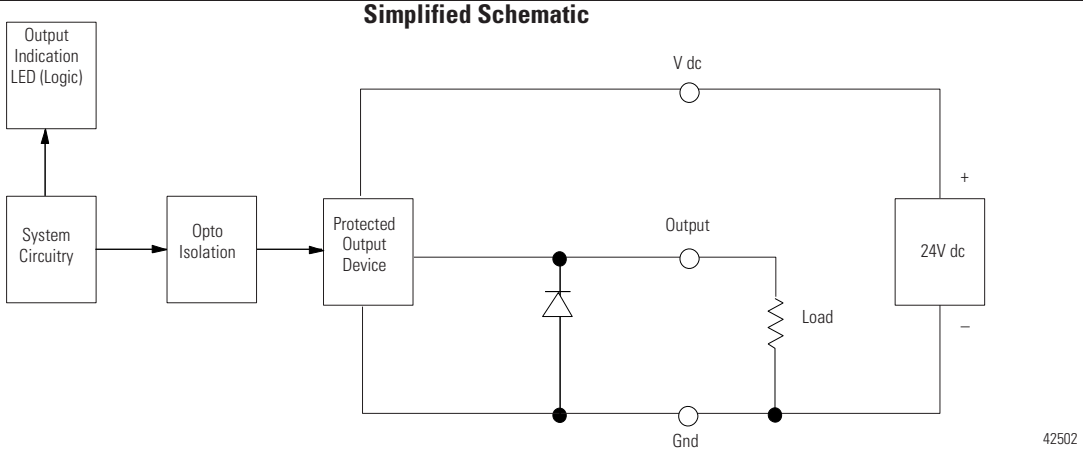
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media 	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V - 25 V dc 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10 - 30V dc 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91 in X 1.9 in X 1.5 in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

16 Sourcing Output Base Module 1791D-0B16P

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Output bits, when the bit is set (1), the output will be turned on.

1791D-0B16P module assemblies are below.

1791D-0B16P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0B16P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0			Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B16P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B16P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	Out 31	Out 30	Out 29	Out 28	Out 27	Out 26	Out 25	Out 24
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

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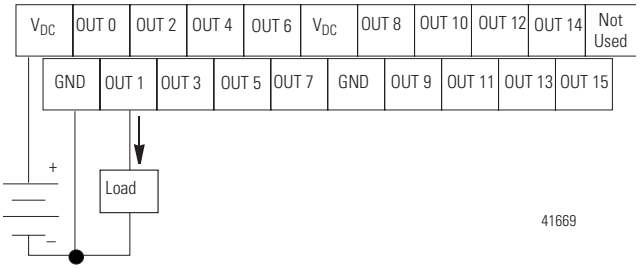
Wiring Connections

Output Wiring Diagram for 1791D-0B16P



Specifications

Sourcing Outputs	
Outputs per Block	2 groups of 8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms, repeatable every 2 s	1.0A maximum

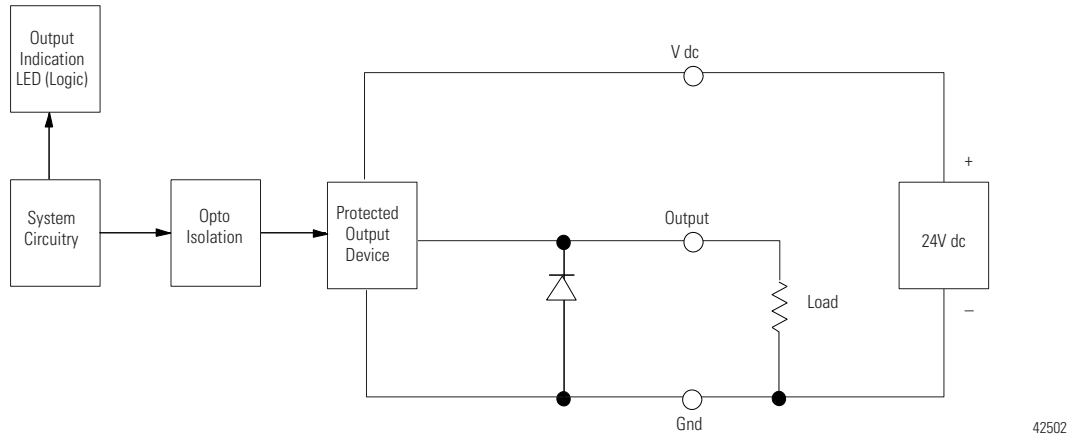
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media 	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V - 25 V dc 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10 - 30V dc 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91 in X 1.9 in X 1.5 in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge (2mm^2) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

16 Sourcing Output Expansion Module 1791D-0B16PX

Simplified Schematic



The CompactBlock expansion module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

This modules consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Output bits, when the bit is set (1), the outputs will be turned on.

1791D-0B16PX module assemblies are below.

1791D-16B0 or 1791D-16V0 with a 1791-0B16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 or 1791D-16V0 with a 1791-0B16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16B0 or 1791D-16V0 with a 1791-0B16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-0B16P or 1791D-0V16P with a 1791-0B16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P or 1791D-0V16P with a 1791-0B16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	Out 31	Out 30	Out 29	Out 28	Out 27	Out 26	Out 25	Out 24
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-8B8P or 1791D-8V8P with a 1791-0B16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P or 1791D-8V8P with a 1791-0B16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8B8P or 1791D-8V8P with a 1791-0B16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault		Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 4	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-0B16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault				In 3	In 2	In 1	In 0

Exp Fault = Expansion Fault

1791D-4B4P with a 1791-0B16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0					In 3	In 2	In 1	In 0

1791D-4B4P with a 1791-0B16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena		In 3	In 2	In 1	In 0
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3					Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-0B16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-0B16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

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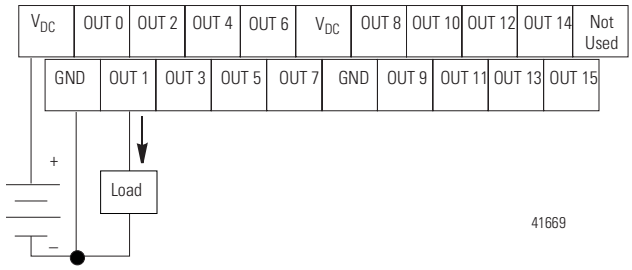
Wiring Connections

Output Wiring Diagram for 1791D-0B16PX Expansion Module



Specifications

Sourcing Outputs	
Outputs per Block	2 groups of 8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms, repeatable every 2 s	1.0A maximum
General Specifications	
Indicators	I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
Expansion Power Voltage Current	 5V dc 100mA
Auxiliary Power Voltage Current	 10 - 30V dc 4A maximum
Expansion Module Dimensions	113mm X 48mm X 38mm 4.4in X 1.9in X 1.5in

General Specifications	
Environmental Conditions	
Operating Temperature	0 to 60°C (32 to 140°F)
Non-Operating Temperature	-40 to 85°C (-40 to 185°F)
Relative Humidity	5-95% non-condensing
Operating Shock	30g
Non-operating Shock	50g
Vibration	tested 5g @ 10-500Hz per IEC 68-2-6
Conductors	
Wire Size	14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum
Category	2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

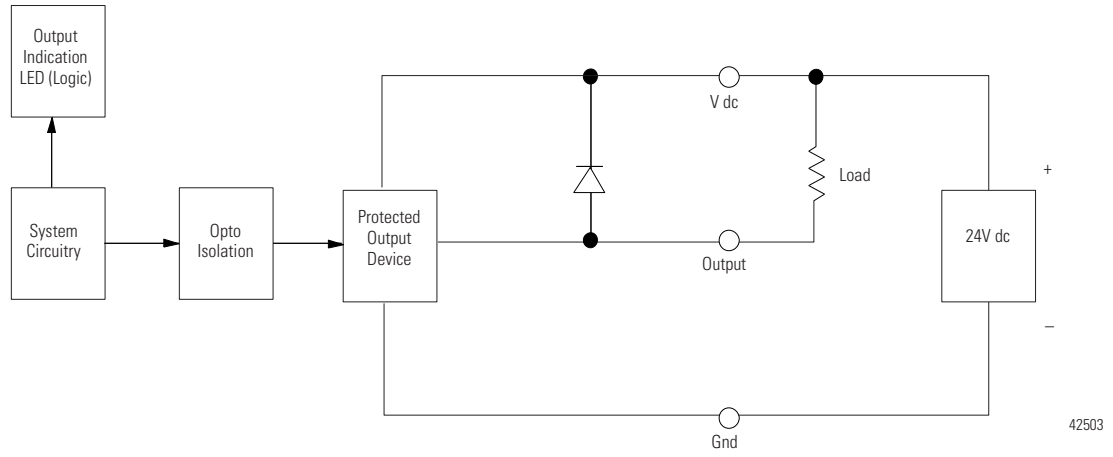
[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

16 Sourcing Output Base Module 1791D-0V16P

Simplified Schematic



The CompactBlock base module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

The module consumes 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Output bits, when the bit is set (1), the output will be turned on.

1791D-0V16P module assemblies are below.

1791D-0V16P with a 1791-16B0X or 1791-16V0X expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-0V16P with a 1791-0B16PX or 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-0V16P with a 1791-16B0X or 1791-16V0X expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-0V16P (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0			Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0V16P with a 1791-16B0X or 1791-16V0X expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0V16P with a 1791-0B16PX or 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	Out 31	Out 30	Out 29	Out 28	Out 27	Out 26	Out 25	Out 24
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

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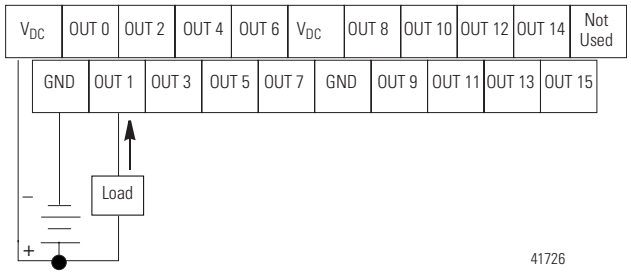
Wiring Connections

Output Wiring Diagram for 1791D-0V16P



Specifications

Sourcing Outputs	
Outputs per Block	2 groups of 8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms repeatable every 2 s	1.0A maximum

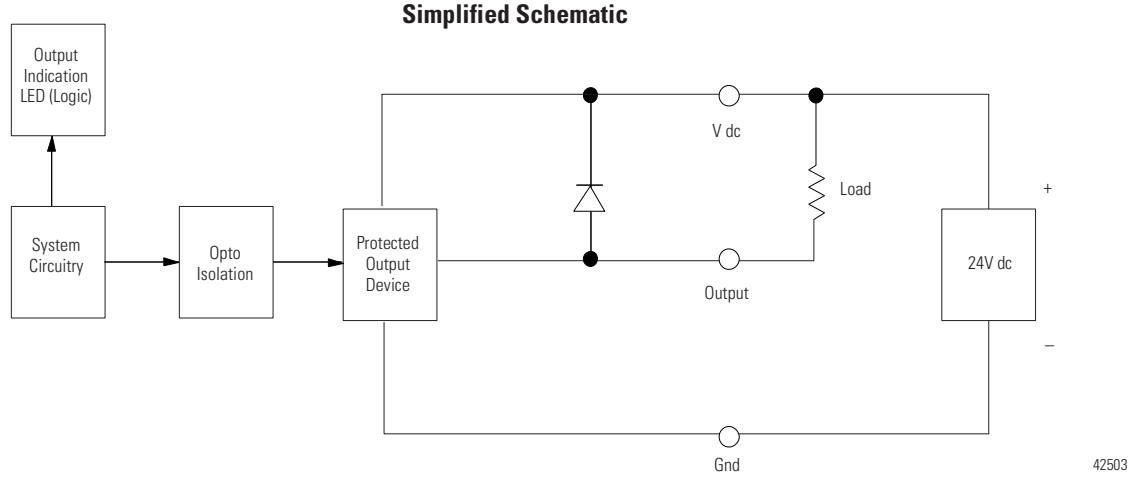
General Specifications	
Indicators	Mod/Net status - red/green Logic status - green I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
DeviceNet Power Voltage Current	 11V - 25 V dc 200mA maximum (with expansion)
Auxiliary Power Voltage Current	 10 - 30V dc 4A maximum
Base Module Dimensions	150mm X 48mm X 38mm 5.91in X 1.9in X 1.5in
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30 g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

16 Sourcing Output Expansion Module 1791D-0V16PX

Simplified Schematic



The CompactBlock expansion module I/O is exchanged with the master through a poll, change-of-state, or cyclic connection.

This module produces 1 byte for every 8 outputs. When an expansion module is connected, it returns an additional byte indicating the health of the expansion module. For the Output bits, when the bit is set (1), the outputs will be turned on.

1791D-0B16PX module assemblies are below.

1791D-16B0 or 1791D-16V0 with a 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault							

Exp Fault = Expansion Fault

1791D-16B0 or 1791D-16V0 with a 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8

1791D-16B0 or 1791D-16V0 with a 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	In 15	In 14	In 13	In 12	In 11	In 10	In 9	In 8
Byte 2	Exp Fault		Logic Ena					
Byte 3	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 4	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable,
PNB = Produced Network Bit (Network Output)

1791D-0B16P or 1791D-0V16P with a 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B16P or 1791D-0V16P with a 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	Out 31	Out 30	Out 29	Out 28	Out 27	Out 26	Out 25	Out 24
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-8B8P or 1791D-8V8P with a 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault							

Exp Fault = Expansion Fault

1791D-8B8P or 1791D-8V8P with a 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0

1791D-8B8P or 1791D-8V8P with a 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	In 7	In 6	In 5	In 4	In 3	In 2	In 1	In 0
Byte 1	Exp Fault		Logic Ena					
Byte 2	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 3	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 4	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 5	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-4B4P with a 1791-0V16PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault				In 3	In 2	In 1	In 0

Exp Fault = Expansion Fault

1791D-4B4P with a 1791-0V16PX expansion (Input Only Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0					In 3	In 2	In 1	In 0

1791D-4B4P with a 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena		In 3	In 2	In 1	In 0
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3					Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

1791D-0B8P with a 1791-0V6PX expansion (Default Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault							

Exp Fault = Expansion Fault

1791D-0B8P with a 1791-0V16PX expansion (DeviceLogix Assembly)

	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	Exp Fault		Logic Ena					
Byte 1	Out 7	Out 6	Out 5	Out 4	Out 3	Out 2	Out 1	Out 0
Byte 2	Out 15	Out 14	Out 13	Out 12	Out 11	Out 10	Out 9	Out 8
Byte 3	Out 23	Out 22	Out 21	Out 20	Out 19	Out 18	Out 17	Out 16
Byte 4	PNB 7	PNB 6	PNB 5	PNB 4	PNB 3	PNB 2	PNB 1	PNB 0

Exp Fault = Expansion Fault, Logic Ena = DeviceLogix Enable, PNB = Produced Network Bit (Network Output)

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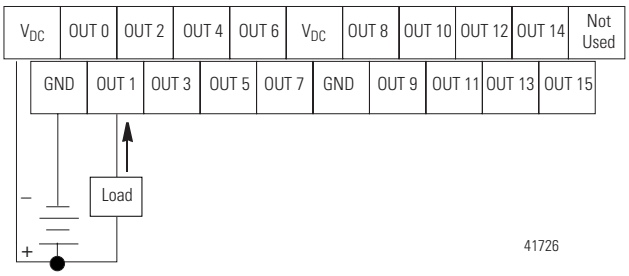
Wiring Connections

Output Wiring Diagram for 1791D-0V16PX Expansion Module



Specifications

Sinking Outputs	
Outputs per Block	2 groups of 8
On-state Voltage Range	10 - 30V dc
On-state Voltage Drop	0.5V dc @ rated current
On-state Current	0.5A maximum
Off-state Leakage	1.0mA maximum
Module Current (all outputs)	4.0A maximum
Surge Current - for 10ms repeatable every 2 s	1.0A maximum
General Specifications	
Indicators	I/O status - yellow
Communication Rate Thick Cable Flat Media	 125Kbps @ 500m (1600ft) 250Kbps @ 200m (600ft) 500Kbps @ 100m (330ft) 125Kbps @ 420m (1230ft) 250Kbps @ 200m (490ft) 500Kbps @ 75m (245ft)
Isolation I/O to DeviceNet I/O group-to-group I/O group-to-logic	 500V ac 500V ac 500V ac
Expansion Power Voltage Current	 5V dc 100mA
Auxiliary Power Voltage Current	 10 - 30V dc 4A maximum
Base Module Dimensions	113mm X 48mm X 38mm 4.4in X 1.9in X 1.5in

General Specifications	
Environmental Conditions Operating Temperature Non-Operating Temperature Relative Humidity Operating Shock Non-operating Shock Vibration	 0 to 60°C (32 to 140°F) -40 to 85°C (-40 to 185°F) 5-95% non-condensing 30g 50g tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size Category	 14 gauge ($2mm^2$) stranded maximum 3/64 inch insulation maximum 2[1, 2]
Product Certifications	UL, UL Hazardous Class I, Div 2, Groups A, B, C, D. C-UL, C-UL Hazardous Class I, Div 2, Groups A, B, C, D. CE marked for all applicable directives
Enclosure	IEC IP20

[1] Use this conductor category information for planning conductor routing as described in the system level installation manual.

[2] Refer to, Programmable Controller Wiring and Grounding Guidelines, publication 1770-4.1.

Notes:

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